Docket No: POUSTKA-2
Appl. No: 09/880,688

AMENDMENTS TO THE CLAIMS WITH MARKINGS TO SHOW CHANGES MADE, AND LISTING OF ALL CLAIMS WITH PROPER IDENTIFIERS

Claims 1-10 (Canceled)

11. (Withdrawn) A device for applying molecules to an essentially flat surface of a support, including means for mounting the support such that it can be rotated about an essentially perpendicular axis of rotation to said surface of the support, means for applying various fluids to the surface of the support in the region of the axis of rotation and at least one laser which can be moved relative to the support to irradiate the selected regions of the support with laser light.

12. (Withdrawn) A device for applying molecules to an essentially flat surface of a support, including nozzle-like means for applying minute quantities of molecules to be anchored on the support, means for displacing the means for applying the molecules and the support relative to each other and at least one laser to irradiate the selected regions of the support with laser light.

13. (Withdrawn) A device for applying molecules to an essentially flat surface of a support, including a container for the particles containing the molecules to be applied, a laser, and means for moving the support and the laser relative to one another.

14. (Withdrawn) The device of claim 13, wherein this device is a modified but otherwise essentially commercially available laser printer or laser copier in which the toner particles are replaced by the particles containing the molecules to be applied.

Claims 15-26 (Canceled)

27. (Withdrawn) A device for applying molecules or substances onto an essentially flat surface of a support, comprising means for mounting the support such that it can be rotated about an axis of rotation essentially perpendicular to the surface of the support, means for applying various fluids to the surface of the support in the region of the axis of rotation and at least one laser which can be displaced relative to the support to irradiate the selected regions of the support with laser light.

28. (Withdrawn) A device for applying molecules or substances to an essentially flat surface of a support, comprising nozzle-like means for applying minute quantities of molecules to be anchored on the support, means for displacing the means for the application of the molecules and the support relative to each other and at least one laser to irradiate the selected regions of the support with laser light.

29. (Withdrawn) A device for applying molecules or substances to an essentially flat surface of a support, including a container for the particles containing the molecules to be applied, a laser, and means for moving the support and the laser relative to one another.

30. (Withdrawn) The device of claim 29, wherein this device is a modified but otherwise essentially commercially available laser printer or laser copier in which the toner particles are replaced by the particles containing the molecules to be applied.

31. (Withdrawn) The device of claim 30, wherein a feedback device adjusts the support roller or a support unit (of the laser printer) in relation to the (laser-) writable roller.

32. (Withdrawn) The device of claim 31, wherein the spatial relationship is produced repeatedly time after time by the feedback device, whereby this spatial reproducibility is also bob-system-specific, that is, it functions between various laser printers.

33. (Withdrawn) The device of claim 31, wherein the feedback device uses a grid of position markings which are applied to the support, the support roller or the transfer unit.

34. (Withdrawn) The device of claim 33, wherein the feedback device corrects the deviation of the position markings with respect to a previously stored grid by electronically shifting the pixels in the printer memory.

35. (Withdrawn) The device of claim 31, wherein the feedback mechanism is accomplished by exact mechanical linking.

36. (Withdrawn) The device of claim 31, wherein the feedback device is accomplished both mechanically and electronically.

37. (Previously presented) A method for applying one or more substances such as monomers to a support for the combinatorial synthesis of molecule libraries, comprising the steps of:

- embedding the substance in a matrix which is at least a first solvent, at a temperature of less than 90° C present in a solid state of aggregation, thereby forming transport units that can be mobilized as units;
- applying the so formed transport units to a support at a temperature of less 90° C, in a solid state, optionally applying to the support the transport units dissolved in a second solvent in a liquid state of aggregation;
- vaporizing the said second solvent component either completely or partially, until the transport units are taking on a solid or gel-like state of aggregation,

and after application to the support remain in a solid or gel-like state of aggregation;

- applying a physical process such that the substance dissolved in the first solvent which are present on the support are mobilized within the solvent until the thus mobilized substance enter near a surface area of the support,
- covalently linking the thus mobilised substance to molecules located on the support, or enter into a chemical reaction or catalyse the molecules thereby yielding a number of different substances coupled to the support;
- repeating the forgoing steps until more than one layer is applied to the support followed by the coupling of substances to the support in precise positions, in each case followed by the covalent linking of the substances to the support, and
- washing away non-linked substances.

38. (Previously presented) The method of claim 37, wherein the temperature of the first solvent is less than 50° C and the temperature of the transport units applied to the support is less than 50° C.

39. (Previously presented) The method of claim 37, wherein the substance is mobilized within the first solvent.

40. (Currently amended) The method of claim 37, wherein the substance having a particle size in the range between 0.2 µm and 200 µm at a temperature of less than 90°C ~~is~~ present in an immobilised state.

41. (Previously presented) The method of claim 40, wherein the particle size is between 2 µm and 40 µm.

42. (Previously presented) The method of claim 40, wherein the temperature is less than 50° C.

43. (Previously presented) The method of claim 47, wherein the support is held at a temperature of at least 10° C lower as compared to the temperature of the transport unit until the start of the linking reaction of the monomer to the support.

44. (Previously presented) The method of claim 37, wherein a locally precise transfer of substances takes place with the aid of a suitably modified printing method.

45. (Currently amended) The method of claim 43, wherein the printing method is carried out with one ~~selected~~ of the group consisting of a laser printer, a laser copier ~~or~~ and an ink jet printer.

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46. (Previously presented) The method of claim 37, wherein a locally precise transfer of substances takes place with the aid of a number of controllable light sources.

47. (Previously presented) The method of claim 45, wherein the light source is a light-emitting diode or micro laser.

48. (Previously presented) The method of claim 37, wherein the substances to be applied to the support are sprayed over the support.

49. (Previously presented) The method of claim 37, wherein the substances on the support are cooled and deep-frozen.

50. (Currently amended) The method of claim 37, wherein the substances contain at least one element or bind to such particles that include such element selected from the group consisting of: magnetic constituents; diphenyl formamide; preliminary stages for monomers, dimers or trimers suitable for combinatorial synthesis; preliminary stages of D or L amino acids, nucleosides or derivatized nucleosides or their mirror images or their derivatives; polystyrene and cellulose to which one or several layers of monomers are linked.

51 (Previously presented) The method of claim 49, wherein the cellulose is linked with one or several layers of monomers.

52. (Previously presented) The method of claim 37, further comprising the step of after a first cycle of linking reactions, detaching protective groups by standard methods so as to form free amino- or hydroxyl groups for linkage with preliminary stages of monomers, dimers.

53. (Previously presented) A method for applying substances to a support, such as monomers for the combinatorial synthesis of molecule libraries, comprising the steps of:

- repeatedly directing electromagnetic waves in precise positions onto selected regions of the support charged with various molecules or various aggregates of these molecules thereby causing interaction between the various molecules or aggregates of these molecules with the incident electromagnetic waves, wherein the interaction of the incident electromagnetic waves with the molecules or with aggregates of these molecules or with other molecules causes local physical or chemical processes being intimated.

54. (Previously presented) The method of claim 53, wherein the electromagnetic waves are laser light.

55. (Previously presented) A method for applying one or more substances such as monomers to a support for the combinatorial synthesis of molecule libraries, comprising the steps of:

- embedding the substance in a matrix provided in the form of at least a first solvent at a temperature of less than 90° C and in a solid state of aggregation, thereby forming transport units that can be mobilized as units;
- applying the so formed transport units to the support at a temperature of less than 90° C, in a solid state;
- wherein after application to the support the transport units are remaining in a solid or gel-like state of aggregation;
- thereafter applying a physical process such that the substances dissolved in the first solvent which are present on the support are mobilized within the solvent until the substances thus mobilized enter near a surface area of the support, and
- covalently linking the thus mobilized substances to molecules located on the support, or enter into a chemical reaction or catalyse the molecules thereby yielding a number of different substances coupled to the support;
- repeating the forgoing steps until more than one layer is applied to the support followed by the coupling of substances to the support in precise positions, in each case followed by the covalent linking of the substances to the support, and
- washing away non-linked substances.

56. (Previously presented) The method of claim 55, wherein the temperature of the first solvent is less than 50° C and the temperature of the transport units applied to the support is less than 50° C.

57. (Previously presented) The method of claim 55, wherein the substance having a particle size in the range between 0.2 µm and 200 µm at a temperature of less than 90 °C is present in an immobilized state.

58. (Previously presented) The method of claim 57, wherein the temperature is less than 50°C.

59. (Previously presented) The method of claim 57, wherein the particle size is between 2 µm and 40 µm.

60. (Previously presented) The method of claim 55, wherein the support is held at a temperature of at least 10 °C lower as compared to the temperature of the transport unit until the start of the linking reaction of a monomer to the support.

61. (Previously presented) The method of claim 55, wherein a locally precise transfer of substances takes place with the aid of a suitably modified printing method.

62. (Currently amended) The method of claim 61 wherein the printing method is carried out with one selected form the group consisting of a laser printer[,] and a laser copier.

63. (Previously presented) The method of claim 55, wherein a locally precise transfer of substances takes place with the aid of a number of controllable light sources.

64. (Previously presented) The method of claim 63, wherein the light source is a light-emitting diode or micro laser.

65. (Previously presented) The method of claim 55, wherein the substances to be applied to the support are sprayed over the support.

66. (Previously presented) The method of claim 55, wherein the substances on the support are cooled and deep-frozen.

67. (Previously presented) The method of claim 55, wherein the substance contains at least one element or bind to such particles that include an element selected from the group consisting of: magnetic constituents; diphenyl formamide; preliminary stages for monomers, dimers or trimers suitable for combinatorial synthesis; preliminary stages of D or L amino

acids, nucleosides or derivatized nucleosides or their mirror images or their derivatives; polystyrene and cellulose.

68 (Previously presented) The method of claim 67, wherein the cellulose is linked with one or several layers of monomers.

69. (Previously presented) The method of claim 55, further comprising the step of after a first cycle of linking reactions, detaching protective groups by standard methods so as to form free amino- or hydroxyl groups for linkage with preliminary stages of monomers, dimers.

70. (Previously presented) The method of claim 55, wherein the support used is one or more selected form the group consisting of polystyrene films, paper, CDs, MODs, DVDs or FMDs.

71. (Previously presented) The method of claim 55, wherein the immobilised substances are moved by applying an electrical voltage.

72. (Previously presented) A method for applying substances such as monomers to a support comprising the steps of:

- repeatedly directing electromagnetic waves in precise positions onto selected regions of the support charged with various molecules or various

aggregates of these molecules thereby causing interaction between the various molecules or aggregates of these molecules with the incident electromagnetic waves, wherein through the interaction of the incident electromagnetic waves with the molecules or with aggregates of these molecules or with other molecules, local physical or chemical processes are carried out.

73. (Previously presented) A method for applying immobilized biological molecules to a support comprising the steps of: positioning the biological molecules to the support using at different times, transport units with different biological molecules; then coupling to the support at least two different biological molecules in one single combinatorial synthesis.

74. (Previously presented) The method of claim 37, wherein the second solvent is dimethyl formamide.